CLAIMS

1. An isolated nucleic acid molecule consisting essentially of a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence according to SEQ ID NOs:1, 3 and 5

(b) a nucleotide sequence having at least 85% identity to the nucleotide sequence according to SEQ ID NOs:1, 3 and 5;

(c) complements of a sequences according to SEQ ID NO:1, 3 and 5; and

(d) sequences that hybridizes to a sequence according to SEQ ID NO:1, 3 and 5 under conditions of normal stringency.

2. A polypeptide comprising an amino acid sequence selected from the group consisting of:

(a) an amino acid sequence according to SEQ ID NOs:2, 4 and 6;

(b) an amino acid sequence having at least 90% identity to the amino acid sequence according to SEQ ID NOs:2, 4 and 6;

(c) a nucleotide sequence encoded by a nucleic acid molecule according to claim 1; and

(d) a nucleotide sequence having at least 85% identity to the nucleotide sequence encoded by a nucleic acid molecule according to claim 1; and

(e) an amino acid sequence encoded by a nucleic acid that hybridizes under conditions of normal stringency to the nucleic acid molecule according to claim 1.

3. A method of identifying a nucleic acid molecule encoding all or a part of a metalloproteinase, comprising:

(1) hybridizing a nucleic acid molecule sample to the nucleic acid molecule according to claim 1 and;

(2) identifying a sequence that hybridizes in said nucleic acid sample.

4. The method of claim 3, wherein the step of identifying includes performing a polymerase chain reaction to amplify said hybridizing sequence.

5. An expression vector comprising a nucleic acid molecule according to claim 1 operably linked to an expression control sequence.

6. The vector of claim 5, wherein said vector is selected from the group consisting of plasmid vectors, phage vectors, herpes simplex viral vectors, adenoviral vectors, adenovirus-associated viral vectors and retroviral vectors.

7. A host cell transformed or transfected with an expression vector according to claim 5.

8. A method of producing a polypeptide, comprising culturing a host cell according to claim 7 under conditions allowing for expression of a sequence of the expression vector; and allowing a time sufficient to produce the MMP-25 polypeptide.

9. An antibody that specifically binds to a polypeptide according to claim 2.

10. The antibody according to claim 9 wherein said antibody is a monoclonal antibody.

11. A hybridoma which produces an antibody according to claim 10.

12. A method of identifying a type 25 matrix metalloproteinase, comprising incubating an antibody according to claim 9 with a sample containing a protein; and waiting a

time sufficient to permit said antibody to bind type 25 matrix metalloproteinase present in the sample, whereby the binding of the antibody identifies a type 25 matrix metalloproteinase.

13. A fusion protein, comprising at least one polypeptide according to claim 2.

14. A ribozyme that cleaves RNA encoding a polypeptide according to claim 2.

15. An antisense nucleic acid molecule comprising a sequence that is antisense to a portion of a nucleic acid molecule according to claim 1.

16. A method of inhibiting a catalytic activity of a polypeptide according to claim 2, comprising administering an agent to the cell that inhibits a catalytic activity of the said polypeptide, with the proviso that said agent inhibits the catalytic activity of said polypeptide to a greater extent than it inhibits the activity of at least one non-type 25 matrix metalloproteinase.

17. A method of inhibiting the expression of a polypeptide according to claim 2, comprising administering to the cell a vector comprising a nucleic acid molecule which contains a sequence that inhibits expression of a polypeptide according to claim 2.

18. The method of claim 17, wherein said nucleic acid molecule encodes a non-functional variant of a matrix metalloproteinase selected from the group consisting of:

(a) an amino acid sequence according to claim 2;

(b) a polypeptide comprising a first matrix metalloproteinase Zn-binding domain with the proviso that the polypeptide lacks a second matrix metalloproteinase Zn-binding domain; and

(c) an amino acid sequence encoded by a nucleic acid that hybridizes under conditions of high stringency to a nucleic acid molecule according to claim 1.

19. The method of claim 17, wherein said nucleic acid molecule encodes a ribozyme that cleaves a RNA encoding the matrix metalloproteinase -25 polypeptide.

20. The method of claim 17, wherein said nucleic acid molecule contains a sequence that is antisense to a portion of a RNA encoding the matrix metalloproteinase -25 polypeptide.

21. A method of modulating hair growth in a mammal, comprising applying a dermatologically acceptable composition comprising an inhibitor of a matrix metalloproteinase, with the proviso that the applied composition reduces the catalytic activity of a type 25 matrix metalloproteinase to a greater extent than it reduces the catalytic activity of at least one non-type 25 matrix metalloproteinase.

22. A polypeptide according to claim 2, wherein said polypeptide has a first matrix metalloproteinase Zn-binding domain and lacks a second matrix metalloproteinase Zn-binding domain.

23. The polypeptide of claim 22, wherein said polypeptide exhibits a catalytic activity of a matrix metalloproteinase.

24. The polypeptide of claim 22, wherein said polypeptide lacks a catalytic activity of a matrix metalloproteinase.